



FPL Energy
Seabrook Station

FPL Energy Seabrook Station
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(603) 773-7000

JUN 29 2005

Docket No. 50-443

SBK-L-05126

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

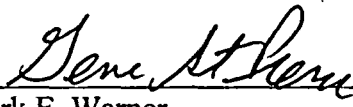
Seabrook Station
Licensee Event Report (LER) 2005-006-00 for
Manual Reactor Trip Due to Main Turbine High Vibration

Enclosed is Licensee Event Report (LER) 2005-006-00. This LER reports an event that occurred at Seabrook Station on May 01, 2005. This event is being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A).

Should you require further information regarding this matter, please contact Mr. James M. Peschel, Regulatory Programs Manager (603) 773-7194.

Very truly yours,

FPL ENERGY SEABROOK, LLC

For 
Mark E. Warner
Site Vice President

cc: S. J. Collins, NRC Region I Administrator
V. Nerses, NRC Project Manager, Project Directorate I-2
G. T. Dentel, NRC Senior Resident Inspector

JE22

ENCLOSURE TO SBK-L-05126

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

| | | |
|--------------------------------------|-------------------------------|-------------------|
| 1. FACILITY NAME Seabrook Station | 2. DOCKET NUMBER 05000 443 | 3. PAGE 1 OF 3 |
|--------------------------------------|-------------------------------|-------------------|

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| 4. TITLE Manual Reactor Trip Due to Main Turbine High Vibration |
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| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---------------|-----|------|---------------|-------------------|---------|----------------|-----|------|------------------------------|---------------|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 05 | 01 | 2005 | 2005 | - 006 - | 00 | 06 | 29 | 2005 | N/A | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | N/A | 05000 |

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|--|--|---|--|---|--|--|--|--|--|--|
| 9. OPERATING MODE 1 | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply) | | | | | | | | | |
| 10. POWER LEVEL 17 | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) | | | | | | |
| | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A | | | | | | | |

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|--|--|
| 12. LICENSEE CONTACT FOR THIS LER | |
| FACILITY NAME James M. Peschel, Regulatory Programs Manager | TELEPHONE NUMBER (Include Area Code) 603-773-7194 |

| 13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT | | | | | | | | | |
|---|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
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|--|--|--|--|--|--|--|-------|-----|------|
| 14. SUPPLEMENTAL REPORT EXPECTED | | | | | 15. EXPECTED SUBMISSION DATE | | MONTH | DAY | YEAR |
| <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) | | | | | <input checked="" type="checkbox"/> NO | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 1, 2005 at 1109, Seabrook Station initiated a manual reactor trip from 17% power. During initial start-up of the main turbine following refueling outage 10, the turbine automatically tripped at approximately 1045 rpm when turbine vibration exceeded the trip setpoint of 12 mils. Following the turbine trip, vibration levels continued to increase and the operators manually tripped the reactor in preparation for breaking condenser vacuum to slow the turbine. Condenser vacuum was broken until the high vibration condition cleared and was then subsequently restored to provide a secondary heat sink. The emergency feedwater system actuated on low steam generator levels following the reactor trip. The cause of the turbine high vibration condition was a turbine rub (contact between the rotor and stationary components in the turbine). The rub creates a hot spot on the rotor that causes the shaft to bow, which will change the center of mass of the rotor. Once a rub starts it will typically spread to multiple locations as the rotor bows and vibration levels increase. Corrective action will be taken to add a precaution to operating procedures to minimize thermal distortion and rapid changes in steam flow through the Turbine to reduce the possibility of initiating a rub.

LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET (2) | LER NUMBER (6) | | | PAGE (3) |
|-------------------|------------|----------------|----------------------|--------------------|----------|
| Seabrook Station | 0500-0443 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 2 OF 3 |
| | | 2005 | - 006 | - 00 | |

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

I. Description of Event

On May 1, 2005 at 1109, Seabrook Station initiated a manual reactor trip from 17% power. During initial start-up of the main turbine [TA, TRB] following refueling outage 10, the turbine automatically tripped at approximately 1045 rpm when turbine vibration exceeded the trip setpoint of 12 mils. Following the turbine trip, vibration levels continued to increase to between 22 and 24 mils. As a result, the operators manually tripped the reactor in accordance with station procedures in preparation for breaking condenser vacuum to slow the turbine. The emergency feedwater system (EFW) [BA] actuated on low steam generator levels following the reactor trip. Condenser vacuum was broken until the high vibration condition cleared and was then subsequently restored to provide a secondary heat sink. The high vibration trip signal reset after approximately 20 minutes with turbine speed below 350 rpm. The main turbine was re-started on May 2, 2005 without incident.

II. Cause of Event

The cause of the turbine high vibration, which resulted in the need for a manual reactor trip, was a turbine rub (contact between the rotor and stationary components in the turbine). The High-Pressure Turbine rotor is a mono-block rotor design. Any rubs on the shaft at or below the rotor's first critical speed will result in rapidly increasing vibration levels. The rub creates a hot spot on the rotor that causes the shaft to bow, which will change the center of mass of the rotor. Once a rub starts it will typically spread to multiple locations as the rotor bows and vibration levels increase.

III. Analysis of Event

This event resulted in valid actuations of the reactor protection [JC] and emergency feedwater systems, meeting the reporting criteria of 10CFR50.72(b)(2)(iv)(B) and 50.72(b)(3)(iv)(A). An immediate report (event #41655) was made to the NRC at 1257 on May 1, 2005. This event is of regulatory significance because it resulted in actuation of systems provided to mitigate the consequences of an accident.

During the event, heat removal via the steam dumps [SB, XCV] to the main condenser [SG, COND] was unavailable for approximately one hour. The unavailability of the condenser following the reactor trip was inconsequential. Because of the low decay heat with the new core, operation of the emergency feedwater system alone prevented any temperature increase sufficient to demand operation of the atmospheric or condenser steam dump valves.

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| | | 2005 | - 006 | - 00 | |

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

No consequences resulted from this event and, therefore, the event had no adverse impact on the plant or on the health and safety of the public. This condition did not involve a Safety System Functional Failure and no inoperable structures, systems, or components contributed to this event. The reactor protection and EFW systems functioned as designed in response to this event.

IV. Corrective Action

The planned corrective action is to add precautions to operating procedures to minimize thermal distortion and rapid changes in steam flow through the Turbine to reduce the possibility of initiating a rub.

V. Additional Information

The Energy Industry Identification System (EIIS) codes are included in this LER in the following format: [EIIS system identifier, EIIS component identifier].

VI. Similar Events

Seabrook Station has had no similar events involving a reactor trip due to high vibrations on the main turbine.